

# 3 Uses for PRIME ACTORIZATION

Greatest Common Factor (GCF)	Reducing/Simplifying Fractions	Least Common Multiple (LCM)
<p>Steps:</p> <ol style="list-style-type: none"> <li>1) Write the prime factorization of each given number</li> <li>2) Circle the factors they have in common</li> <li>3) Multiply those factors to get GCF</li> </ol>	<p>Steps:</p> <ol style="list-style-type: none"> <li>1) Write the prime factorization of the numerator above the prime factorization of the denominator</li> <li>2) Cross out any factors they have in common</li> <li>3) Multiply the numbers that are left in the numerator and the denominator</li> </ol>	<p>Steps:</p> <ol style="list-style-type: none"> <li>1) Write the prime factorization of each given number</li> <li>2) Circle each <b>different</b> factor where it appears the <b>most times</b></li> <li>3) Multiply what you circle.</li> </ol>
<p>Find the GCF of 42 and 56 using prime factorization:</p> <p>①</p> $  \begin{array}{r}  42 \\  2 \cdot 3 \cdot 7 \\  56 \\  2 \cdot 2 \cdot 2 \cdot 7  \end{array}  $ <p>②</p> $  \begin{array}{r}  42: 2 \cdot 3 \cdot 7 \\  56: 2 \cdot 2 \cdot 2 \cdot 7  \end{array}  $ <p>③</p> $2 \cdot 7 = 14$ <p>GCF = 14</p>	<p>Simplify 32/48 using prime factorization:</p> <p>①</p> $  \begin{array}{r}  32 \\  2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \\  48 \\  2 \cdot 2 \cdot 2 \cdot 2 \cdot 3  \end{array}  $ <p>②</p> $  \frac{32}{48} = \frac{2 \cdot 2 \cdot 2 \cdot 2 \cdot 2}{2 \cdot 2 \cdot 2 \cdot 2 \cdot 3} = \frac{2}{3}  $	<p>Find the LCM of 12, 8 and 15 using prime factorization:</p> <p>①</p> $  \begin{array}{r}  12 \\  2 \cdot 2 \cdot 3 \\  8 \\  2 \cdot 2 \cdot 2 \\  15 \\  3 \cdot 5  \end{array}  $ <p>②</p> $  \begin{array}{r}  12: 2 \cdot 2 \cdot 3 \\  8: 2 \cdot 2 \cdot 2 \\  15: 3 \cdot 5  \end{array}  $ <p>③</p> $2 \cdot 2 \cdot 2 \cdot 3 \cdot 5 = 120$ <p>LCM = 120</p>

# Greatest Common Factor vs. Lowest Common Multiple

<p><b>GCF</b></p> <p>Find the Great Common Factor of 12 and 15</p>	<p><b>LCM</b></p> <p>Find the Least Common Multiple of 12 and 15</p>
<p>List the Factors Method:</p> <div> <div> <math display="block">\begin{array}{r} 12 \\ 1 \overline{) 12} \\ 2 \overline{) 6} \\ 3 \overline{) 4} \end{array}</math> </div> <div> <math display="block">\begin{array}{r} 15 \\ 1 \overline{) 15} \\ 3 \overline{) 5} \end{array}</math> </div> </div> <p>GCF = 3</p>	<p>List the Multiples Method:</p> <p>12: 12, 24, 36, 48, 60</p> <p>15: 15, 30, 45, 60</p> <p>LCM = 60</p>
<p>Prime Factorization Method:</p> <p>12: <math>2 \cdot 2 \cdot 3</math></p> <p>15: <math>3 \cdot 5</math></p> <p>GCF = 3</p>	<p>Prime Factorization Method:</p> <p>12: <math>2 \cdot 2 \cdot 3</math></p> <p>15: <math>3 \cdot 5</math></p> <p>LCM = 60</p>
<p>Division Ladder Method:</p> <div> <math display="block">\begin{array}{r} 3 \overline{) 12} \quad 15 \\ 4 \quad 5 \end{array}</math> </div> <p>GCF = 3</p>	<p>Division Ladder Method: (only w/ TWO #'s)</p> <div> <math display="block">\begin{array}{r} 3 \overline{) 12} \quad 15 \\ 4 \quad 5 \end{array}</math> </div> <p>LCM = 60</p> <p><math>3 \times 4 \times 5 = 60</math></p>

## **Lesson 4-5 Equivalent Fractions/Simplifying Fractions**

Directions: State whether each fraction is in *simplest form*. If it is not, please write it in simplest form:

$2\frac{12}{36}$	$30\frac{14}{14}$
$5\frac{8}{15}$	$22\frac{33}{33}$

## **Lesson 4-6 Mixed Numbers and Improper Fractions**

Directions: Write each mixed number as an improper fraction. Write each improper fraction as a mixed number in simplest form.

$3\frac{4}{10}$	$14\frac{8}{8}$
$9\frac{2}{3}$	$24\frac{9}{9}$

## Lesson 4-7 Least Common Multiple

**Directions:** Find the Least Common Multiple of each set of numbers.

9 and 21	18 and 24
6, 8 and 12	6, 7 and 14

## Lesson 4-8 Comparing and Ordering Fractions

**Directions:** Use the LCD to create common denominators when solving each of these problems.

order from <u>least</u> to <u>greatest</u> $\frac{3}{5}, \frac{1}{2}, \frac{2}{3}$	order from least to greatest $2\frac{5}{6}, 2\frac{1}{3}, 2\frac{4}{9}$
compare $\frac{9}{14} \bigcirc \frac{5}{7}$	compare $3\frac{3}{8} \bigcirc 3\frac{1}{3}$